Patients with Suspected Pancreatic Cancer: Importance of Adjunctive FNA of Pancreatic Duct Fluid, Ascites and Liver Lesions

Marc F Catalano, Nathan J Landesman, Nalini M Guda, Tal B Hazan, Joseph F Geenen
GI Associates, LLC, Milwaukee, WI USA; Pancreatic Biliary Center at Aurora St. Luke’s Medical Center, Milwaukee, WI USA

Introduction

- Role of EUS in the diagnosis and staging of patients with suspected Pancreatic Cancer is well established.
- Accuracy of EUS FNA tissue diagnosis is 80-90%.
- False negative results may be operator dependent, inadequate tissue sampling and a variety of anatomical variables.
- Staging accuracy is of critical importance in determining treatment options (resection vs palliative).
- Patients with unsuspected liver mets and those with malignant ascites confirm advanced disease and thus poor outcomes.
- The role of adjunctive FNA of pancreatic duct fluid, ascites and liver lesions has been inadequately described.

Aim of Study

To determine the role of adjunctive EUS guided FNA in patients with Pancreatic Cancer including ascitic fluid, pancreatic juice and associated liver lesions.

Methods

- During an 8-yr period (1/01-1/09), 152 patients with suspected/confirmed pancreatic mass by CT (CT positive= 88, CT negative= 33, CT equivocal= 31) were referred for EUS/FNA for diagnosis/staging.
- Patients without Pancreatic Cancer on FNA or F/U were excluded from analysis.
- Endosonography was performed initially with radial endosonography (Olympus Corporation) identifying all relevant anatomic abnormality including pancreas, liver, celiac trunk, superior mesenteric artery (SMA).
- Subsequent, linear endosonography (Olympus Corporation) was performed with FNA of the primary pancreatic mass, pancreatic duct juice, ascites, and liver masses when present.

Results I

- Pancreatic mass was located in HOP (n=85), BOP (n=38), TOP (n=29).
- In patients with HOP mass, FNA was positive (n=75), negative (n=4), atypical (n=6).
- In patients with BOP mass, FNA was positive (n=31), negative (n=4), atypical (n=3).
- In patients with TOP mass, FNA was positive (n=24), negative (n=3), atypical (n=2).

Results II

- Adjunctive FNA was performed in 28 patients with HOP mass (14 duct, 9 ascites, 5 liver), 16 patients with BOP (7 duct, 5 ascites, 3 liver), 7 patients with TOP mass (1 duct, 3 ascites, 3 liver).
- Of the 16 patients with negative atypical FNA in HOP mass, 5 adjunctive FNA were positive (3 duct, 1 ascites, 1 liver).
- Of the 10 patients with negative/typical FNA in BOP mass, 5 adjunctive FNA were positive (2 duct, 1 ascites, 1 liver).
- Of 4 patients with negative/typical FNA in TOP mass, 2 adjunctive FNA were positive (1 ascites, 1 liver).
- No complications were encountered in this patient series.

Results II

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- Of 4 patients with negative/typical FNA in TOP mass, 2 adjunctive FNA were positive (1 ascites, 1 liver).
- No complications were encountered in this patient series.

Conclusion

Patients presenting with clinical or radiographic suspicion of Pancreatic Cancer, accuracy of EUS FNA of the primary tumor is high but not optimal. Adjunctive FNA of pancreatic juice, ascites and liver lesions is safe; improves tissue diagnosis and may identify patients who may be unresectable, necessitating palliative treatment.

Table I

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<th>FNA</th>
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Table II

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<th>Location-Mass:</th>
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Figures:

- EUS guided FNA of primary liver mass.
- FNA showing Adenocarcinoma following sampling of primary pancreatic mass.
- EUS image in a patient with pancreatic Adenocarcinoma demonstrating metastatic liver lesions.
- FNA of patient with a 1cm liver nodule showing metastatic Adenocarcinoma.
- EUS FNA of a dilated pancreatic duct in a patient with a pancreatic head mass.
- FNA of pancreatic juice in a patient with a dilated pancreatic duct showing Adenocarcinoma.
- Cytology showing Adenocarcinoma from FNA of ascites fluid.
Accuracy of Post-Procedure Endoscopic Retrograde Cholangiopancreatography (ERCP) Spot Film Interpretation by Radiologists – a Pilot Study

Nathan J Landesman, Marc F Catalano, Tal B Hazan, Nalini M Guda, Joseph E Geenen

Gl Associates, LLC, Milwaukee, WI USA; Pancreatic Biliary Center at Aurora St. Luke’s Medical Center, Milwaukee, WI USA

Introduction

- Post-procedure interpretation of ERCP films by radiology (RAD) is routinely performed; however, the necessity and accuracy of this practice has been disputed.
- RAD interpretation of ERCP films at tertiary care centers is under scrutiny.

Methods

- Prospective analysis of 150 consecutive ERCPs at a tertiary care center.
- Baseline fluorescent interpretation by GI was compared to RAD interpretation of post-procedure films.
- Pancreatobiliary pathology: Stones, strictures, biliary and pancreatic dilated ducts.
- Spiral dilators: 150, balloon dilation: 100, Spyglass: 50.
- Biliary pathology: Missed by RAD: • 10 dilated ducts, • 32 stones, • 45 strictures, • 32 stones, • 2 balloon sweeps/dilations.
- Pancreatic pathology: • 11 dilated ducts, • 32 stones, • 45 strictures, • 2 balloon sweeps/dilations.

Results I

- ERCP findings (31):
  - Biliary: 45 dilated ducts, 32 stones, 22 balloon sweeps/dilations.
  - Pancreatic: 32 dilated ducts, 24 strictures, 12 balloon sweeps/dilations.

Results II

- Pathology missed by RAD:
  - Biliary: • 11 balloon sweeps/dilations, • 11 stone/stones, • 6 Spyglass.
  - Pancreatic: • 6 dilated ducts, • 5 strictures.

Results III

- Pancreatobiliary RAD Accuracy:
  - Biliary: 89% stones, 75% obstructions, 75% dilated ducts.
  - Pancreatic: 95% stones, 75% dilated ducts, 75% obstructions.

Accessories missed by RAD:
- Biliary: • 11 balloon sweeps/dilations, • 11 stone/stones, • 6 Spyglass.
- Pancreatic: • 6 dilated ducts, • 5 strictures.

Recommendations

- In high volume pancreatobiliary centers with experienced endoscopists, official interpretation of post-ERCP films by RAD is unnecessary.
- In centers with less experience, a radiologist should be present for the interpretation of real-time fluoroscopy with involvement of official endoscopists.
- This pilot study has highlighted areas of potential improvement.

Conclusion

- RAD accuracy:
  - 75% for biliary findings (max 84%)
  - 54% for pancreatic findings (max 89%)

- Areas of attention/intervention noted
  - PANIN, duct disruption, Spyglass identification lower than expected.

- This pilot study has highlighted areas of potential improvement.
- Further studies and procedures would be required to correctly identify and definitively intervene if not handled during initial ERCP.

- Concerning RAD trends:
  - Over-read of biliary stricture/dilation in 4 cases
  - Under-read of biliary stricture/dilation in 4 cases
  - No further studies or procedures resulted from RAD inaccuracy.

- This pilot study has highlighted areas of potential improvement.
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- Conclusion

- Further studies and procedures would be required to correctly identify and definitively intervene if not handled during initial ERCP.
Colonoscopy At An Ambulatory Center: Does Total Polyp Detection Act As A Surrogate Marker For A Complete Colonoscopic Exam?

Tal B Hazan, Lyndon V Hernandez, Nathan J Landesman, Nalini M Guda, Joseph E Geenen, Marc F Catalano

GI Associates, LLC, Milwaukee, WI USA; Pancreatic Biliary Center at Aurora St. Luke’s Medical Center, Milwaukee, WI USA

Introduction
- Colonoscopy is a powerful tool in detecting the incidence of colon cancer (CRC), the leading cause of death from cancer.
- Screening reduces rate by detection of adenomatous polyps and consequently interruption of the “polyp-cancer sequence”.
- The national polyp study demonstrated a 76 – 90% reduction in colorectal cancer incidence over prolonged surveillance.

Methods
- Data was prospectively gathered on 7,999 colonoscopies performed between 1/07 – 9/09 at an ambulatory center involving 6 physicians.
- Those with active GI bleed were excluded.
- Data was recorded on a standardized proforma.
- Patients were categorized into groups of polyps per patient and adenomas per patient.

Results

Table I
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*A Physicians in first year of practice
** Each Physician receives an annual performance report

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Conclusion
- The number of total polyp detected per patient acts as surrogate marker of thorough colonoscopic examination.
- There was a strong correlation between adenoma detection and longer withdrawal time.
- Physician with highest adenoma detection also represented the one with highest withdrawal time percentage of ≥ 5-minutes.
- Physician who took <5 minutes on withdrawal time had highest polyp detection.
- Physician with lowest adenoma detection also represented the one with highest withdrawal time percentage of ≥ 5-minutes.
- Physician with highest adenoma detection spent more time upon withdrawal of colonoscope (>5-minutes).
- Physician with lowest adenoma detection over a 3-year period demonstrated favorable results in terms of adenoma detection and withdrawal time compared very favorably to other more seasoned gastroenterologists.

Despite yearly performance reports, physician habits may be difficult to change.
Dorsal Pancreatic Duct Stones In Pancreas Divisum: Demographics, Associated Factors, Presentation, Management, Recurrence, & Clinical Course

Nathan J Landesman, Marc F Catalano, Tal B Hazan, Nalini M Guda, Joseph E Geenen
GI Associates, LLC, Milwaukee, WI USA; Pancreatic Biliary Center at Aurora St. Luke’s Medical Center, Milwaukee, WI USA

Introduction

- Pancreatic divisum (PDIV) is the most common congenital anatomical variant of the pancreas, in which ventral and dorsal ducts fail to fuse.
- Dorsal pancreatic duct (DPD) stones have been described in PDIV, which can cause acute flares of chronic pancreatitis and chronic abdominal pain.
- Although successful removal of ventral pancreatic duct stones is possible in over 75% of cases with improved symptoms, PDIV with DPD stones may present additional challenges.

Aim of Study

- To determine rate of PDIV complicated by DPD stones.
- To identify trends among patients with PDIV and DPD stones.
- To determine success rate of endoscopic therapy in management of PDIV with DPD stones.

Methods I

- Retrospective chart review of 147 consecutive patients with PDIV to identify cases with DPD stones.
  - Historical data:
    - Rates of PDIV complicated by DPD stones
    - Time from diagnosis of PDIV to detection of DPD stone disease
    - Symptoms at time of DPD stone detection
    - Etiology of symptom flare
  - Demographic data:
    - Age/sex/race
    - Type 1 diabetes
    - Combined autoimmune disease
    - Psychiatric illness
    - Cigarette/alcohol use
    - Family history of pancreatitis

Results I

- 96% of PDIV were complicated by DPD stone formation.
  - Ages 21-82
  - 26 males/21 females
  - 16 Caucasian/2 Hispanic/1 Black
  - 78.9% smoked cigarettes
  - 63.4% drank alcohol
  - 47.3% had type II diabetes
  - 41.8% had depression/mood disorder
  - 30.3% had autoimmune disease
  - 5.3% had increased IgG4 levels
  - 14% had increased T cell levels
  - Time from diagnosis of PDIV to detection of DPD stone disease
  - Range 0-12 yrs
  - Mean 2.6 yrs

Methods II

- DPD stone characteristics
  - Success rate of DPD stone intervention:
    - Total number of ERCPs
  - Rate of Endoscopic Success in Management of DPD Stone Disease
    - Sphincterotomy
    - Balloon sweep/dilation
    - Mechanical lithotripsy
    - Spyglass cholangioscopy with electrohydraulic lithotripsy
  - Persistence/Recurrence of DPD stones
    - Current pathology
    - Previous pathology
    - DPD stone recurrence

Results II

- 78.9% had symptoms at time of DPD stone detection (nausea, vomiting, abdominal pain, weight loss)
- 47.3% had type II diabetes
- 13.6% had depression/mood disorder
- 30.3% had autoimmune disease
- 5.3% had increased IgG4 levels
- 14% had increased T cell levels
- Follow-up ranged from 9 months – 14 years after DPD stone removal.
- 11 mm = largest DPD stone
- Multiple DPD stones were most common.
- 78.9% had successful stone removal with combination therapy proving most effective.
- Persistence/recurrence of DPD stones
  - 15.8% of patients had recurrent/persistent DPD stones.
- 89.5% had DPD strictures.
- 31.6% balloon dilation + stent
- 26.3% balloon sweep
- 31.6% catheter dilation + balloon dilation + stent
- 5.3% sphincterotomy
- No patients developed pancreatic cancer

Methods III

- Failure:
  - Dorsal duct clearance
  - Hematoma/pneumocystis – Further treatment options
  - PSA level check
  - Surgical intervention
  - Pancreatic cancer
  - Death

Results III

- Management of DPD stricture:
  - 10.5% catheter dilation
  - 10.5% catheter dilation + stent
  - 31.6% catheter dilation + balloon dilation + stent
  - 42.1% combination therapy
  - 4.2% combination therapy + catheter dilation
  - No patients developed pancreatic cancer
  - 1 patient died (unrelated cause)
  - 42.1% rate of pancreas cyst formation (prior to ERCP)
  - 36.8% had recurrent DPD stricture.

Table I

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<th>Improved Symptoms</th>
<th>DPD Stone Recurrence</th>
<th>Multi Node Stone Removal</th>
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<td>89.5%</td>
<td>78.9%</td>
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<td>2019</td>
<td>42.1%</td>
<td>95.6%</td>
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Conclusion

- Approximately, 11% patients with PDIV developed DPD stones.
- Cigarette/alcohol use common
- Type 2 DM and depression/mood disorder were also associated; however, it unclear if these represent risk factors or sequelae.
- Multiple DPD stones were most common.
- 78% had successful stone removal with combination therapy proving most effective.
- DPD stone recurrence was notable, however.
- Endoscopic therapy afforded symptomatic improvement in the majority of patients and prevented surgery in all but 3 cases.